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NOTIFICATION OF REASONS FOR REFUSAL

Patent Application No: 2002-230367

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Applied Section: Patent Law Section 29, Paragraph 2

Final

This application should be refused for the reason mentioned below. If the applicant has any argument against the reason, such argument should be submitted within 60 days from the date on which this notification was dispatched.

REASON

The invention according to claims listed below of this application can not be patented under the provisions of Patent Law Section 29, Second paragraph for the reason that the invention could have been readily made by those skilled in the art before filing of this application, based on the inventions described in the following publications distributed or the

inventions made available to the public through electric communication lines, in Japan or in foreign countries before filing of this application.

#### NOTE

(Refer to List of Cited References for cited references)

Claim 1

Cited References: 1, 2

Note:

The following elements of the invention described in Cited Reference 1, "upper magnetic layer 115 formed of amorphous magnetic material", "tunnel barrier layer 310 formed of oxide of aluminum, etc.", "first magnetic layer 215 formed of ferromagnetic body having bcc structure", and "TMR element", correspond to the following elements of the present invention, "magnetization-free layer formed of non-crystalline ferromagnetic layer, that is provided on the intermediary layer", "intermediary layer", "magnetization-fixed layer formed of crystalline ferromagnetic layer, that is provided under the intermediary layer", "magnetoresistor element configured to obtain magnetoresistance change by applying current perpendicularly to the film surface" (see Claim 10, [0034]-[0041], and FIG. 7 of Cited Reference 1).

Then, the present invention and the invention of Cited Reference 1 differs in that while the magnetization-fixed layer of the present invention is formed by lamination of, from the lower layer, crystalline ferromagnetic layer, Ru layer, and crystalline ferromagnetic layer, in this order, the magnetization-fixed layer of the invention of Cited Reference 1 does not have such lamination structure.

However, there is described in Cited Reference 2 that for the magnetization-fixed layer in the magnetoresistor element, the one, that is formed by lamination of, from the lower layer, crystalline ferromagnetic layer, Ru layer, and crystalline ferromagnetic layer, in this order, is used (in particular see [0148], [0152]). Adopting the magnetization-fixed layer having such lamination structure for the magnetization-fixed layer of the invention of Cited Reference 1 is merely conversion of known structure and can be deemed as what can be appropriately done by those skilled in the art.

The effect of the present invention can be also deemed to be within the scope that can be well predicted from the effects of the inventions of Cited References 1, 2.

Claim 2

Cited References: 1-3

Note:

See Claim 10, [0034]-[0041] of Cited Reference 1.

Further, as described in Cited Reference 3, using a semiconductor for the tunnel layer that is formed between ferromagnetic layers is known (see [0040]), and applying this to the invention of Cited Reference 1 to make the tunnel barrier layer 310 with a semiconductor is merely conversion of known means and can be deemed as what can be appropriately done by those skilled in the art.

Claim 3

Cited References: 1, 2, 4

Note:

See Note column for Claim 1.

As described in Cited Reference 4, the magnetic memory device provided with a word line and a bit line that sandwich the magnetoresistor element in the thickness direction is known (see FIG. 1, FIG. 4, FIG. 5 and corresponding description portions), and citing the magnetoresistor element of Cited Reference 1 and applying the same to the magnetic memory device of Cited Reference 4 is merely conversion of known means and can be deemed as what can be appropriately done by those skilled in the art.

Claim 4

Cited References: 1-4

Note:

See Note column for Claim 2.

#### List of Cited References

1. Japanese Unexamined Patent Application Publication No.  
2001-083119
2. Japanese Unexamined Patent Application Publication No.  
2001-345494
3. Japanese Unexamined Patent Application Publication No.  
11-238924
4. Japanese Unexamined Patent Application Publication No.  
2002-204004

#### Reason for the Final Notification of Reasons for Refusal

The Final Notification of Reasons for Refusal is notified only when the reasons for refusal are necessitated by amendments made in response to a previous Non-final Notification of Reasons for Refusal.

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#### <Points to Consider When Amending>

- (1) When the specification has been amended, the portions

where the description has been changed by amendment should be underlined (Regulations under the Patent Law, Form No. 13, Note 6).

(2) The amendments should be made within the scope of the matters described in the specification or the drawings originally attached to the request and the matters inherently presented in the description or the drawings originally attached to the request and are limited to those aimed to restrict the scope of claims, to clarify ambiguous description, or to correct errors in the description. When amending, it is requested that the reason why each amendment is legitimate is asserted in the written argument while specifically showing the supporting portions of the description, claims and drawings originally attached to the request (for the description form of the written argument, see the description form of the demand for correction in the trial for invalidation).

Any inquiry concerning this Notification of Reasons for Refusal should be directed to the following:

Patent Examination 3rd Dept. Semiconductor Devices  
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